

PRACTICE QUESTIONS

USAI

Certified Artificial Intelligence Scientist

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EDITION	Free Set 2
QUESTIONS	10
SHARED	October 15, 2026
EXAM	USAI Certified Artificial Intelligence Scientist

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10 practice questions for the USAII Certified Artificial Intelligence Scientist exam, each followed by its answer and a short explanation. More free sets and the full practice exam:

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1. Which statement about the bias-variance tradeoff is correct?

- A Increasing model complexity always lowers both bias and variance together
- B Ensembling several models always increases variance in the final prediction it returns
- C Bias measures how sensitive a model is to the particular training sample
- D Simpler models tend to have higher bias and lower variance than complex models

Answer: D

A simpler model makes stronger assumptions, so it misses structure (higher bias) but changes less when the data changes (lower variance). Claiming complexity lowers both is the tempting distractor, since more capacity often lowers bias, but it raises variance. Bias is not sensitivity to the sample; that describes variance.

2. Under the NIST AI Risk Management Framework, the GOVERN function is intended to be applied once, at the start of an AI project.

- A True
- B False

Answer: B (False)

GOVERN describes organization-wide policies, roles and culture that apply across the AI lifecycle and need continuing oversight. It is not a one-time kickoff task. The statement is false.

3. In a random forest, which technique reduces the correlation between individual trees?

- A Training every tree on the identical dataset in the same order each time
- B Bootstrap row sampling with random feature subsets at each split
- C Boosting each tree to fit the residuals of the previous tree
- D Pruning every tree down to a single split

Answer: B

Bagging gives each tree a different bootstrap sample, and random feature selection at each split stops a few strong features from dominating every tree. Boosting is the tempting distractor, since it also combines trees, but it builds them sequentially on residuals rather than decorrelating them. Training on identical data would make the trees very similar.

4. The area under the precision-recall curve is often preferred to ROC AUC when the positive class is _____.

Answer: rare (also accepted: rare class, uncommon, imbalanced)

When positives are rare, the false positive rate on the huge negative class can look small even when the model is poor, while precision exposes the problem directly. This is why PR curves are the usual choice for rare-event problems. Accepted answers cover the common words for a scarce class.

5. Which two techniques reduce the number of tabular features without using the target labels? (Choose two.)

- A Principal component analysis
- B Linear discriminant analysis
- C Truncated singular value decomposition
- D Recursive feature elimination with a logistic model
- E Target encoding of categorical columns

Answer: A, C

PCA and truncated SVD find lower-dimensional projections from the feature values alone, so they are unsupervised. Linear discriminant analysis is the tempting distractor, since it is a dimensionality method, but it uses class labels to choose its projection. Recursive feature elimination and target encoding both use the label.

6. What is the main purpose of a canary release for a new model version?

- A Sending a small share of live traffic to the new version and comparing metrics
- B Permanently deleting the previous model artifact to save storage
- C Retraining the model on a larger dataset before it is shown to any users at all
- D Removing the need for production monitoring during the release

Answer: A

A canary exposes a small slice of real traffic, so regressions show up before every user is affected, and the rollout expands only if the metrics hold. Deleting the previous artifact is a risky distractor, because rollback needs it. Retraining is a separate step and does not test the release in production.

7. Which control best protects a deployed prediction API against model extraction attempts?

- A Publishing the full model architecture and weights in the public documentation
- B Rate limiting, authentication and monitoring of query patterns
- C Returning full-precision probability vectors for every query without limits
- D Disabling all logging so that unusual query behavior leaves no trace

Answer: B

Extraction needs many queries, so limits, authentication and anomaly monitoring make it costly and detectable. Returning full probability vectors gives an attacker more signal per query, which is the tempting mistake. Disabling logs removes the evidence needed to detect extraction.

8. Explainability methods such as SHAP can help identify which input features contributed most to an individual prediction.
- A True
 - B False

Answer: A (True)

SHAP attributes a prediction to its input features using Shapley values, which gives local explanations for single cases. Explanations still need to be validated, because they describe the model rather than the world. The statement is true.

9. Which pairing of KPIs best connects a product recommendation model to business value?
- A Click-through rate and revenue per session in a controlled A/B test
 - B Training loss, the number of layers and the optimizer used in the network
 - C GPU utilization and the size of the storage volume
 - D The number of notebooks created and the number of commits

Answer: A

Click-through and revenue per session measure user behavior and money, and an A/B test isolates the model's effect from seasonality. Training loss is a model internal, which makes it the tempting distractor. Infrastructure and activity counts describe effort, not outcomes.

10. Which artifact is most useful for tracing which dataset version produced a deployed model?
- A A screenshot of the training dashboard saved to a slide deck
 - B A transcript from the kickoff meeting about the project scope
 - C The name of the cloud region where the model was trained
 - D A data version record linked to the model registry entry

Answer: D

A linked data version record ties the registry entry to exact inputs, which is what an audit or rollback investigation needs. A screenshot of a dashboard is not reproducible evidence. The region name is a real attribute but does not identify the dataset.